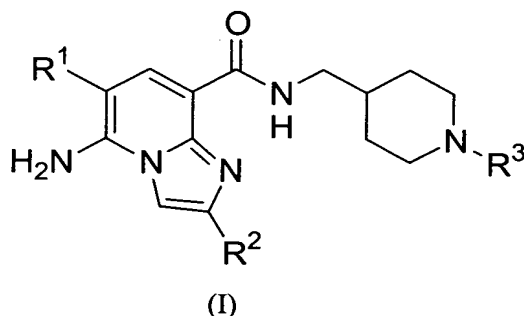


## CLAIMS

1. A compound of the formula (I):



5

wherein

R<sup>1</sup> represents a hydrogen atom or a halogen atom;

R<sup>2</sup> represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, an aminocarbonyl group, or mono- or di-alkylaminocarbonyl group having from 1 to 6 carbon atoms;

10

R<sup>3</sup> represents an alkyl group having from 1 to 10 carbon atoms;

said alkyl group of R<sup>3</sup> is substituted by at least one substituent selected from the group consisting of substituents  $\alpha$  ;

said substituents  $\alpha$  is aryl, hydroxy, oxo, aminocarbonyl, mono- or di-alkylaminocarbonyl having from 1 to 6 carbon atoms, alkylsulfonylamino group having from 1 to 6 carbon atoms, heterocyclic, heterocycliccarbonyl, or cycloalkyl having from 3 to 8 carbon atoms;

15

said aryl of substituents  $\alpha$  having 6 to 10 carbon atoms;

said aryl of substituents  $\alpha$  is unsubstituted or substituted by at least one alkyl group having from 1 to 6 carbon atoms;

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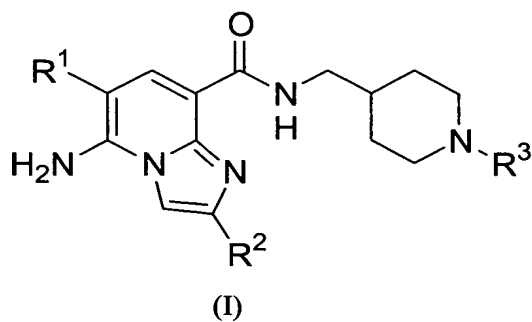
said heterocyclic and the heterocyclic moiety of said heterocycliccarbonyl, both of substituents  $\alpha$ , are 5- to 10-membered cyclic groups containing from 1 to 4 heteroatoms selected from the group consisting of sulfur atoms, oxygen atoms and nitrogen atoms;

or a pharmaceutically acceptable amide of such compound,

25

or a pharmaceutically acceptable ester of such compound,  
or a pharmaceutically acceptable salt thereof.

2. A compound of the formula (I):



5

wherein

**R<sup>1</sup>** represents a hydrogen atom or a halogen atom;

**R<sup>2</sup>** represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, an  
aminocarbonyl group, or mono- or di-alkylaminocarbonyl group having from 1 to 6  
carbon atoms;

**R<sup>3</sup>** represents an alkyl group having from 1 to 10 carbon atoms;

said alkyl group in **R<sup>3</sup>** is substituted by at least one substituent selected from the  
group consisting of substituents  $\alpha$ ;

said substituents  $\alpha$  is aryl, hydroxy, oxo, aminocarbonyl, mono- or di-  
alkylaminocarbonyl having from 1 to 6 carbon atoms, alkylsulfonylamino groups  
having from 1 to 6 carbon atoms, heterocyclic, heterocycliccarbonyl, or cycloalkyl  
having from 3 to 8 carbon atoms;

said aryl of substituents  $\alpha$  having 6 to 10 carbon atoms;

said aryl of substituents  $\alpha$  is unsubstituted or substituted by at least one alkyl group  
having from 1 to 6 carbon atoms;

said heterocyclic and the heterocyclic moiety of said heterocycliccarbonyl, both of  
substituents  $\alpha$ , are 5- to 10-membered cyclic groups containing from 1 to 4  
heteroatoms selected from the group consisting of sulfur atoms, oxygen atoms and

nitrogen atoms;

or a pharmaceutically acceptable ester of such compound,  
or a pharmaceutically acceptable salt thereof.

3. The compound of Claim 2, wherein  $R^1$  represents a hydrogen atom or a chlorine atom.

5           4. The compound of Claim 2, wherein  $R^1$  represents a chlorine atom.

5. The compound according to any one of Claims 2 to 4, wherein  $R^2$  represents an alkyl group having from 1 to 6 carbon atoms, an aminocarbonyl group, or mono- or di-alkylaminocarbonyl group having from 1 to 6 carbon atoms.

6. The compound according to any one of Claims 2 to 4, wherein  $R^2$   
10 represents an alkyl group having from 1 to 6 carbon atoms.

7. The compound according to any one of Claims 2 to 4, wherein  $R^2$  represents a methyl group or an ethyl group.

8. The compound according to any one of Claims 2 to 7, wherein  $R^3$  represents an alkyl group having from 1 to 8 carbon atoms;  
15 said alkyl group of  $R^3$  is substituted by at least one substituent selected from the group consisting of substituents  $\alpha$ ;

said substituents  $\alpha$  is aryl, hydroxy, oxo, aminocarbonyl, mono- or di-alkylaminocarbonyl having from 1 to 6 carbon atoms, alkylsulfonylamino having from 1 to 6 carbon atoms, heterocyclic, heterocycliccarbonyl, or cycloalkyl having  
20 from 3 to 8 carbon atoms;

said heterocyclic and the heterocyclic moiety of said heterocycliccarbonyl, both of substituents  $\alpha$ , are 5- to 7-membered cyclic groups containing from 1 to 3 heteroatoms selected from the group consisting of sulfur atoms, oxygen atoms and nitrogen atoms.

25           9. The compound according to any one of Claims 2 to 7, wherein  $R^3$  represents an alkyl group having from 1 to 10 carbon atoms;  
said alkyl group in  $R^3$  is substituted by at least one substituent selected from the group consisting of substituents  $\alpha$ ;

said substituents  $\alpha$  is aryl, hydroxy, oxo, alkylsulfonylamino having from 1 to 6  
30 carbon atoms or heterocycliccarbonyl;

the heterocyclic moiety of said heterocycliccarbonyl ispiperidinyl or morpholinyl.

10. A compound according to Claim 1 selected from

5-amino-6-chloro-*N*-{[1-(3,3-dimethyl-2-oxobutyl)piperidin-4-yl]methyl}-2-methylimidazo[1,2-*a*]pyridine-8-carboxamide;

5 5-amino-6-chloro-*N*-{[1-(2-hydroxy-3,3-dimethylbutyl)piperidin-4-yl]methyl}-2-methylimidazo[1,2-*a*]pyridine-8-carboxamide;

5-amino-6-chloro-2-ethyl-*N*-{[1-(3-morpholin-4-yl-3-oxopropyl)piperidin-4-yl]methyl}imidazo[1,2-*a*]pyridine-8-carboxamide;

10 5-amino-6-chloro-2-ethyl-*N*-{[1-(2-morpholin-4-yl-2-oxoethyl)piperidin-4-yl]methyl}imidazo[1,2-*a*]pyridine-8-carboxamide;

5-amino-6-chloro-*N*-{[1-(3,3-dimethyl-2-oxo-2-butyl)piperidin-4-yl]methyl}-2-ethylimidazo[1,2-*a*]pyridine-8-carboxamide;

5-amino-6-chloro-2-ethyl-*N*-{[1-(2-[(methylsulfonyl)amino]ethyl))piperidin-4-yl]]methyl}imidazo[1,2-*a*]pyridine-8-carboxamide;

15 5-amino-6-chloro-2-ethyl-*N*-{[(1,2-hydroxy-2-methylpropyl)piperidin-4-yl]methyl}imidazo[1,2-*a*]pyridine-8-carboxamide;

5-amino-6-chloro-*N*-{[1-(2-hydroxy-2-methylpropyl)piperidin-4-yl]methyl}-2-methylimidazo [1,2-*a*]pyridine-8-carboxamide ;

20 5-amino-6-chloro-2-ethyl-*N*-{[1-(4-hydroxy-3,3-dimethyl-2-oxobutyl)piperidin-4-yl]methyl}imidazo[1,2-*a*]pyridine-8-carboxamide ;

5-amino-6-chloro-2-ethyl-*N*-{[1-(2-hydroxybutyl)piperidin-4-yl]methyl}imidazo[1,2-*a*]pyridine-8-carboxamide, half oxalate salt ;and

5-amino-6-chloro-2-ethyl-*N*-{[1-(2-oxy-2-piperidin-1-ylethyl)piperidin-4-yl]methyl}imidazo[1,2-*a*]pyridine-8-carboxamide ;

25 or a pharmaceutically acceptable ester of such compound,  
or a pharmaceutically acceptable salt thereof.

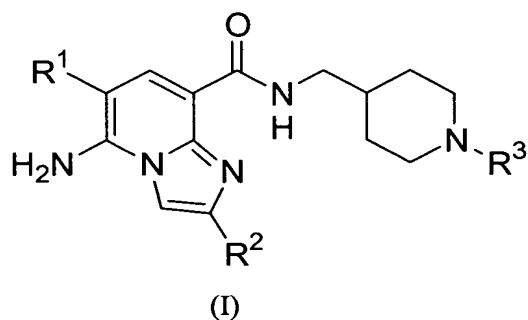
11. A compound according to Claim 1 selected from

5-amino-6-chloro-*N*-{[1-(3,3-dimethyl-2-oxo-2-butyl)piperidin-4-yl]methyl}-2-ethylimidazo[1,2-*a*]pyridine-8-carboxamide;

30 5-amino-6-chloro-2-ethyl-*N*-{[1-(2-[(methylsulfonyl)amino]ethyl))piperidin-4-

- yl]]methyl]imidazo[1,2-*a*]pyridine-8-carboxamide;  
 5-amino-6-chloro-2-ethyl-*N*-{[(1-(2-hydroxy-2-methylpropyl)piperidin-4-yl)methyl}imidazo[1,2-*a*]pyridine-8-carboxamide;  
 5-amino-6-chloro-*N*-{[1-(2-hydroxy-2-methylpropyl)piperidin-4-yl)methyl}-2-methylimidazo [1,2-*a*]pyridine-8-carboxamide;  
 5-amino-6-chloro-2-ethyl-*N*-{[1-(4-hydroxy-3,3-dimethyl-2-oxobutyl)piperidin-4-yl)methyl}imidazo[1,2-*a*]pyridine-8-carboxamide;  
 5-amino-6-chloro-2-ethyl-*N*-{[1-(2-hydroxybutyl)piperidin-4-yl)methyl}imidazo[1,2-*a*]pyridine-8-carboxamide, half oxalate salt ;and  
 5-amino-6-chloro-2-ethyl-*N*-{[1-(2-oxy-2-piperidin-1-ylethyl)piperidin-4-yl)methyl}imidazo[1,2-*a*]pyridine-8-carboxamide;  
 or a pharmaceutically acceptable ester of such compound.  
 or a pharmaceutically acceptable salt thereof .

12. A pharmaceutical composition for the treatment or prevention of gastroesophageal reflux disease, gastrointestinal disease, gastric motility disorder, upper gut motility disorder, non-ulcer dyspepsia, functional dyspepsia, irritable bowel syndrome, constipation, dyspepsia, esophagitis, gastroesophageal disease, nausea, central nervous system disease, alzheimers disease, cognitive disorder, emesis, migraine, neurological disease, pain, ischaemic stroke, anxiety or cardiovascular disorder, which comprises a therapeutically effective amount of a compound of the formula (I):



wherein

- $R^1$  represents a hydrogen atom or a halogen atom;  
 $R^2$  represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, an

aminocarbonyl group, or mono- or di-alkylaminocarbonyl group having from 1 to 6 carbon atoms;

$R^3$  represents an alkyl group having from 1 to 10 carbon atoms;

said alkyl group in  $R^3$  is substituted by at least one substituent selected from the  
5 group consisting of substituents  $\alpha$ ;

said substituents  $\alpha$  is aryl, hydroxy, oxo, aminocarbonyl, mono- or di-alkylaminocarbonyl having from 1 to 6 carbon atoms, alkylsulfonylamino having from 1 to 6 carbon atoms, heterocyclic, heterocycliccarbonyl, or cycloalkyl having from 3 to 8 carbon atoms;

10 said aryl of substituents  $\alpha$  having 6 to 10 carbon atoms;

said aryl of substituents  $\alpha$  is unsubstituted or substituted by at least one alkyl group having from 1 to 6 carbon atoms;

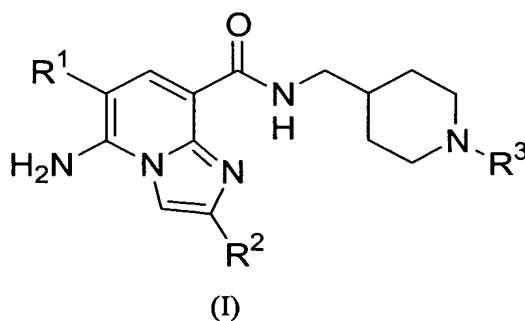
said heterocyclic and the heterocyclic moiety of said heterocycliccarbonyl, both of substituents  $\alpha$ , are 5- to 10-membered cyclic groups containing from 1 to 4  
15 heteroatoms selected from the group consisting of sulfur atoms, oxygen atoms and nitrogen atoms;

or a pharmaceutically acceptable amide of such compound,

or a pharmaceutically acceptable ester of such compound,

or a pharmaceutically acceptable salt thereof.

20 **12.** A method for the treatment or prevention of disease conditions mediated by 5-HT<sub>4</sub> receptor activity, in a mammalian subject, which comprises administering to said subject a therapeutically effective amount of a compound of the formula (I):



wherein

$R^1$  represents a hydrogen atom or a halogen atom;

$R^2$  represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, an aminocarbonyl group, or mono- or di-alkylaminocarbonyl group having from 1 to 6 carbon atoms;

$R^3$  represents an alkyl group having from 1 to 10 carbon atoms;

said alkyl group in  $R^3$  is substituted by at least one substituent selected from the group consisting of substituents  $\alpha$ ;

said substituents  $\alpha$  is aryl, hydroxy, oxo, aminocarbonyl, mono- or di-alkylaminocarbonyl having from 1 to 6 carbon atoms, alkylsulfonylamino having from 1 to 6 carbon atoms, heterocyclic, heterocycliccarbonyl, or cycloalkyl having from 3 to 8 carbon atoms;

said aryl of substituents  $\alpha$  having 6 to 10 carbon atoms;

said aryl of substituents  $\alpha$  is unsubstituted or substituted by at least one alkyl group having from 1 to 6 carbon atoms;

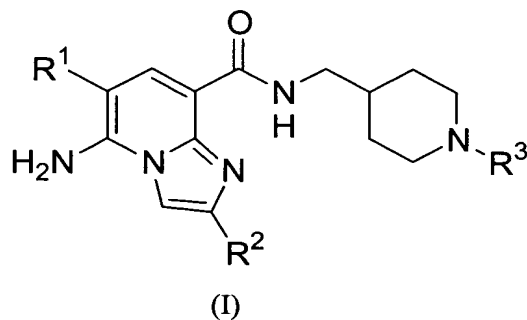
said heterocyclic and the heterocyclic moiety of said heterocycliccarbonyl, both of substituents  $\alpha$ , are 5- to 10-membered cyclic groups containing from 1 to 4 heteroatoms selected from the group consisting of sulfur atoms, oxygen atoms and nitrogen atoms;

or a pharmaceutically acceptable amide of such compound,

or a pharmaceutically acceptable ester of such compound,

or a pharmaceutically acceptable salt thereof.

<sup>4</sup>  
~~13~~ 1. A method for the treatment or prevention of gastroesophageal reflux disease, gastrointestinal disease, gastric motility disorder, upper gut motility disorder, non-ulcer dyspepsia, functional dyspepsia, irritable bowel syndrome, constipation, dyspepsia, esophagitis, gastroesophageal disease, nausea, central nervous system disease, alzheimers disease, cognitive disorder, emesis, migraine, neurological disease, pain, ischaemic stroke, anxiety or cardiovascular disorder, which comprises administering to said subject a therapeutically effective amount of a compound of the formula (I):



wherein

**R<sup>1</sup>** represents a hydrogen atom or a halogen atom;

5 **R<sup>2</sup>** represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, an aminocarbonyl group, or mono- or di-alkylaminocarbonyl group having from 1 to 6 carbon atoms;

**R<sup>3</sup>** represents an alkyl group having from 1 to 10 carbon atoms;

10 said alkyl group in **R<sup>3</sup>** is substituted by at least one substituent selected from the group consisting of substituents  $\alpha$ ;

said substituents  $\alpha$  is aryl, hydroxy, oxo, aminocarbonyl, mono- or di-alkylaminocarbonyl having from 1 to 6 carbon atoms, alkylsulfonylamino having from 1 to 6 carbon atoms, heterocyclic, heterocycliccarbonyl, or cycloalkyl having from 3 to 8 carbon atoms;

15 said aryl of substituents  $\alpha$  having 6 to 10 carbon atoms;

said aryl of substituents  $\alpha$  is unsubstituted or substituted by at least one alkyl group having from 1 to 6 carbon atoms;

20 said heterocyclic and the heterocyclic moiety of said heterocycliccarbonyl, both of substituents  $\alpha$ , are 5- to 10-membered cyclic groups containing from 1 to 4 heteroatoms selected from the group consisting of sulfur atoms, oxygen atoms and nitrogen atoms;

or a pharmaceutically acceptable amide of such compound,

or a pharmaceutically acceptable ester of such compound,

or a pharmaceutically acceptable salt thereof.